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10/721,221	11/26/2003	Eric A. Merz	116594	5748

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EXAMINER
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GARCIA JR, RENE

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 11/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/721,221

Applicant(s)

MERZ ET AL.

Examiner

Rene Garcia, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,4-17,19-31,37,38 and 40-50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 37,38 and 40-50 is/are allowed.
- 6) ☒ Claim(s) 1,4-16 and 19-26 is/are rejected.
- 7) ☒ Claim(s) 17 and 27-31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Withdraw of Allowable Subject Matter***

1. The indicated allowable subject matter of claim 18 (now incorporated with claim 1) is withdrawn. Spitz et al. (US 6,820,959) includes a substrate carrier containing a base polymer and filler material with a receiving area for an ink container.

### ***Claim Objections***

2. Claims 19-23 are objected to because of the following informalities: Claim 19 (with claims 20-23 dependent upon claim 19) requires dependency upon cancelled claim 18 therefore lack proper dependency. It assumed for the purpose of examination that the claims are meant to depend from independent claim 1 since claim 18 was incorporated with claim 1. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 24 & 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 24 depends from independent claim 1, which limits the fluid ejector carriage device to a fluid ejector module and a receiving area [narrow]. However claim 24 attempts to broaden the scope of the invention by including limitations for multiple receiving areas and for multiple fluid ejector modules e.g. from one to a plurality. Claim 25 requires limitations provided in claim 24 that continues to broaden the scope of independent claim 1.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 4, 5, 6, 7, 9, 11, 12, 15, 16, 19, 22, 23, 24, 25 & 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Spitz et al. (US 6,820,959).

**Spitz et al. discloses the following claimed limitations:**

\*regarding claim 1, fluid ejector carriage assembly comprising:

\*thermally-conductive fluid ejector carriage device/**substrate carrier, 10/** (col. 4, lines 24-25, 32-35; col. 4, line 66 – col. 5, line 27; col. 3, line 44-56)

\*fluid ejector module/**semiconductor chip/** in thermal contact with the thermally-conductive fluid ejector carriage device/**10/** (col. 4, lines 40-51)

\*wherein the thermally-conductive fluid ejector carriage device/**10/** is molded from a polymer material containing at least a base polymer (col. 8, line 51 – col. 9, line 38) and at least one thermally-conductive filler material (col. 4, line 32-35), and the thermally-conductive fluid ejector carriage device/**10/** comprises a receiving area (col. 5, lines 19-29) usable to receive a cartridge/**ink reservoir body, 72/** comprising a container that stores a fluid to be ejected by the fluid ejector module in contact with the fluid ejector module (col. 4, lines 58-61; figs. 1B & 2A)

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\*Regarding claim 1, the process [molded] of forming the fluid ejector carriage device is not given patentable weight in an apparatus claim. How the structure is formed is not relevant only that the structure is present [has a base polymer and thermally-conductive filler material].

Substrate carrier/10/ is made of a thermally-conductive material and then coated with a polymer material, therefore making the main structure within the coating the filler. However column 4 lines 66 & 67 teaches molding, shaping or machining the device.

\*regarding claims 4 & 6, thermally-conductive filler material has a thermal conductivity greater than about 10 W/m°C (known property of graphite)

\*regarding claim 5 thermally-conductive filler material has a thermal conductivity less than about 100W/m°C (known property of graphite)

\*regarding claim 7, thermally-conductive filler material is a graphite material (graphite – col. 4, lines 32-35)

\*regarding claim 9, thermally-conductive filler material is a ceramic material (col. 4, lines 32-35)

\*regarding claim 11, base polymer is at least one of liquid crystal polymer, polyphenylene sulfide and polysulfone (col. 8, lines 60-65)

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\*regarding claim 12, base polymer is chemically resistant to ink (col. 10, lines 1-5)

\*regarding claim 15, contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module is augmented with at least one thermally-conductive heat sink compound (col. 4, lines 40-45; heat conductive adhesive)

\*regarding claim 16, contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module comprises at least a temporary bond between the thermally-conductive fluid ejector carriage device and the fluid ejector module (col. 4, lines 40-45; heat conductive adhesive is not a permanent bond)

\*regarding claim 19, container/72/ that stores the fluid is molded from a thermally-conductive material/**thermoplastic material**/ and the contact between the container that stores fluid and the fluid ejector module/**semiconductor chip**/ establishes a heat flow path for heat dissipation (col. 5, lines 30-33)

\*Regarding claims 19-23, examiner assumes dependency is with regards to independent claim 1. How the container is formed is not given patentable weight only that the structure is made of a thermally conductive material.

\*regarding claim 22, contact between the container/72/ that stores fluid and the fluid ejector module comprises at least a temporary bond between the container that stores fluid and

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the fluid ejector module (col. 5, lines 30-60; when alignment is being carried out slots/74/ are larger than tabs/80/ for adjustment purposes)

\*regarding claim 23, contact between container that stores fluid and the fluid ejector module is augmented with at least one mechanical device or structure (col. 5, lines 30-60; tabs/80/ and slots/74/; no direct contact is required by claim limitations)

\*regarding claim 24, thermally-conductive fluid ejector carriage device/10/ further comprises multiple receiving areas usable to receive multiple fluid ejector modules/**semiconductor chips**/ (col. 4, lines 40-41; figs. 1A & 1B)

\*regarding claim 25, each receiving area is usable to receive a cartridge comprising a container that stores a fluid to be ejected by the fluid ejector module in contact with a fluid ejector module (col. 4, lines 56-61; not limited to different inks therefore can be same ink)

\*regarding claim 26, thermally-conductive fluid ejector carriage device further comprises an integral molded heat sink/**cooling fins, 34**/ (col. 4, line 60 – col. 5, line 7; figs. 1A & 1B)

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. Claims 8 & 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spitz et al. (US 6,820,959) in view of Miller et al. (USPGPUB 2005/0109766).

**Spitz et al. discloses all the claimed limitations except for the following:**

\*regarding claim 8, graphite material is formed using a petroleum pitch based material

\*regarding claim 10, ceramic material is at least one of boron nitride and aluminum nitride

**Miller et al. disclose the following:**

\*regarding claim 8, graphite material is formed using a petroleum pitch based material (paragraph 0032) for the purpose of dissipating heat

\*regarding claim 10, ceramic material is at least one of boron nitride and aluminum nitride (paragraph 0020 & 0017-0018) for the purpose of dissipating heat

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize graphite material is formed using a petroleum pitch based material; and ceramic material is at least one of boron nitride and aluminum nitride as taught by Miller et al. into Spitz et al. for the purpose of dissipating heat.

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spitz et al. (US 6,820,959).

**Tanuma et al. all the claimed limitations except for the following:**

\*regarding claim 13, thermally-conductive fluid ejector carriage device and fluid ejector module are made of materials having similar coefficients of thermal expansion



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It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose materials having similar coefficients of thermal expansion, since it has been held to be within the general skill of a worker in the art to select a know material on the basis of its suitability for the intended use as a matter of obvious design choice. **In re Leshin, 125 USPQ 416.**

10. Claims 14 & 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spitz et al. (US 6,820,959) in view of Niikura et al. (USPGPUB 8,550,754).

**Spitz et al. discloses all the claimed limitations except for the following:**

\*regarding claim 14, contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module is augmented with at least one compliant, thermally-conductive pad

\*regarding claim 20, contact between the container that stores fluid and the fluid ejector module is augmented with at least one compliant, thermally-conductive pad

**Niikura et al. discloses the following:**

\*regarding claim 14, contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module is augmented with at least one compliant, thermally-conductive pad (col. 7, lines 32-40 - carriage acts as a heat sink therefore it is obvious to use similar means to transfer heat between elements) for the purpose of dissipating heat

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\*regarding claim 20, contact between the container that stores fluid and the fluid ejector module is augmented with at least one compliant, thermally-conductive pad/**block, 68/** (col. 7, lines 32-40) for the purpose of heat dissipation

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module is augmented with at least one compliant, thermally-conductive pad; and contact between the container that stores fluid and the fluid ejector module is augmented with at least one compliant, thermally-conductive pad as taught by Niikura et al. into Spitz et al. for the purpose of dissipating heat

11. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spitz et al. (US 6,820,959) as modified by Niikura et al. (USPGPUB 8,550,754) as applied to claim 19 above, and further in view of Mrvos et al. (US 2002/0001020).

**Spitz et al. as modified by Niikura et al. discloses all the claimed limitations except for the following:**

\*regarding claim 21, contact between the container that stores fluid and the fluid ejector module is augmented with at least one thermally-conductive heat sink compound

**Mrvos et al. disclose the following:**

\*regarding claim 21, contact between the container that stores fluid/**container, 22/** and the fluid ejector module/**nozzle plate, 70/** is augmented with at least one thermally-conductive heat sink compound/**heater chip, 60 with adhesive/** (paragraph 0024, 0026 and 0027) for the purpose of providing heat transfer between nozzle plate and tank

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize contact between the container that stores fluid and the fluid ejector module is augmented with at least one thermally-conductive heat sink compound as taught by Mrvos et al. into Spitz et al. as modified by Niikura et al. for the purpose of providing heat transfer between nozzle plate and tank

***Response to Arguments***

12. Applicant's arguments with respect to claims 1, 4-17, 19-31, 37, 38 & 40-50 have been considered but are moot in view of the new ground(s) of rejection. Spitz et al. (US 6,820,959) teaches the previously allowable subject matter of claim 18 as provided in rejection above.

***Allowable Subject Matter***

13. Claims 27-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter: The primary reason for indicating allowable subject matter of claims 27-31 is the inclusion of the limitation of a fluid ejector carriage device including a separate heat sink is mounted in contact with the thermally-conductive fluid ejector carriage device. It is this limitation found in each of the claims, as it is claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

15. Claims 37, 38 & 40-50 are allowed.

The following is an examiner's statement of reasons for allowance: The primary reason for the allowance of claims 37, 38 & 40-50 is the inclusion of the method steps for dissipating

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heat from a thermal fluid ejector module that includes a thermally-conductive polymer carriage device being provided with at least one receiving area that is suitably sized to accept at least *one integral print cartridge comprising a fluid ejector module assembly and a container that stores a fluid to be ejected by the fluid ejector module*, operating thermal fluid ejector module in contact with the thermally-conductive polymer carriage device in a manner that generates excess heat in the fluid ejector module, and transferring the excess heat through the flow path established by the contact between the at least one thermal fluid ejector module and the thermally-conductive polymer carriage device. It is these steps found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


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***Communications with the USPTO***

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rene Garcia, Jr. whose telephone number is (571) 272-5980. The examiner can normally be reached on M-F 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Rene Garcia Jr  
11/06

  
STEPHEN MEIER  
SUPERVISORY PATENT EXAMINER